

FOOD WASTE COLLECTION: MILAN'S EXPERIENCE

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A2A Life Company



INTEGRATED AND BALANCED BUSINESS PORTFOLIO

ENERGY

Electricity and gas
Power generation
E-mobility
Energetic efficiency

GRIDS

Distribution e.e. and gas
District heating
Water cycle
Smart City
Public lighting

ENVIRONMENT

Waste collection and road cleanings
Resource recovery
Energy recovery (WtE)



SERVICES

16 TWh electricity produced

15 TWh electricity sold

2,6 Bln m³ gas sold

325.000 light points managed

11 TWh electricity distributed

3 TBlm m³ gas distributed

3 TWh heat sold

3,2 Mln ton waste treated

83 Mln m³ water distributed

BUSINESS UNIT: ENVIRONMENT

KEY FIGURES



5.900
People



5,2 Mt
Total waste managed



2,0 millions kWh electrical energy from waste
1,6 million kWh heat energy from waste



4 millions
Users served through waste management
and roads cleaning



Italian leader for waste to
resources and energy recovery

- 14** Plants for resource recovery
- 10** WtE Plants
- 9** MBT Plants
- 5** Multifunctional platforms
- 3** Organic and green waste management plants
- 3** landfills

Financial Highlights M€	
	2021
Revenues	1.260
EBITDA	341

Waste management in Milan

CITY OF MILAN: WASTE COLLECTION

Key figures

1.39 million
inhabitants



800,000
Commuters/day

7,625
Inh./km²

10,86 millions
Tourists in 2019 (Statista)



626,789
T of Municipal
Waste (2021)



62.4%
Separate
collection in
2021



55,000
waste collection
points (door to
door)



1,380
vehicles for
waste collection
and cleaning
service
CNG: **33%**



23,000
Bins in
streets and
parks



5
civic amenity
sites and **2**
mobile Eco
centers



13
Smart
containers
for WEEE



13
T-recycle
e-bikes

THE INTEGRATED WASTE CYCLE IN MILAN

Circular economy of waste



WASTE SERVICE IN MILAN

Main services



Door-to-door separate waste collection

- 5 fractions: bins (paper and cardboard, glass and organic) and bags (light packaging, residual waste)
- 55,000 collection points
- Waste storage in every building
- Frequency: once a week for dry recyclables and residual, twice a week for organic waste
- Pick-ups between 5:30 am and 12:00 am from Mon to Fri
- The city center (highest traffic area) is served before 8:00 am

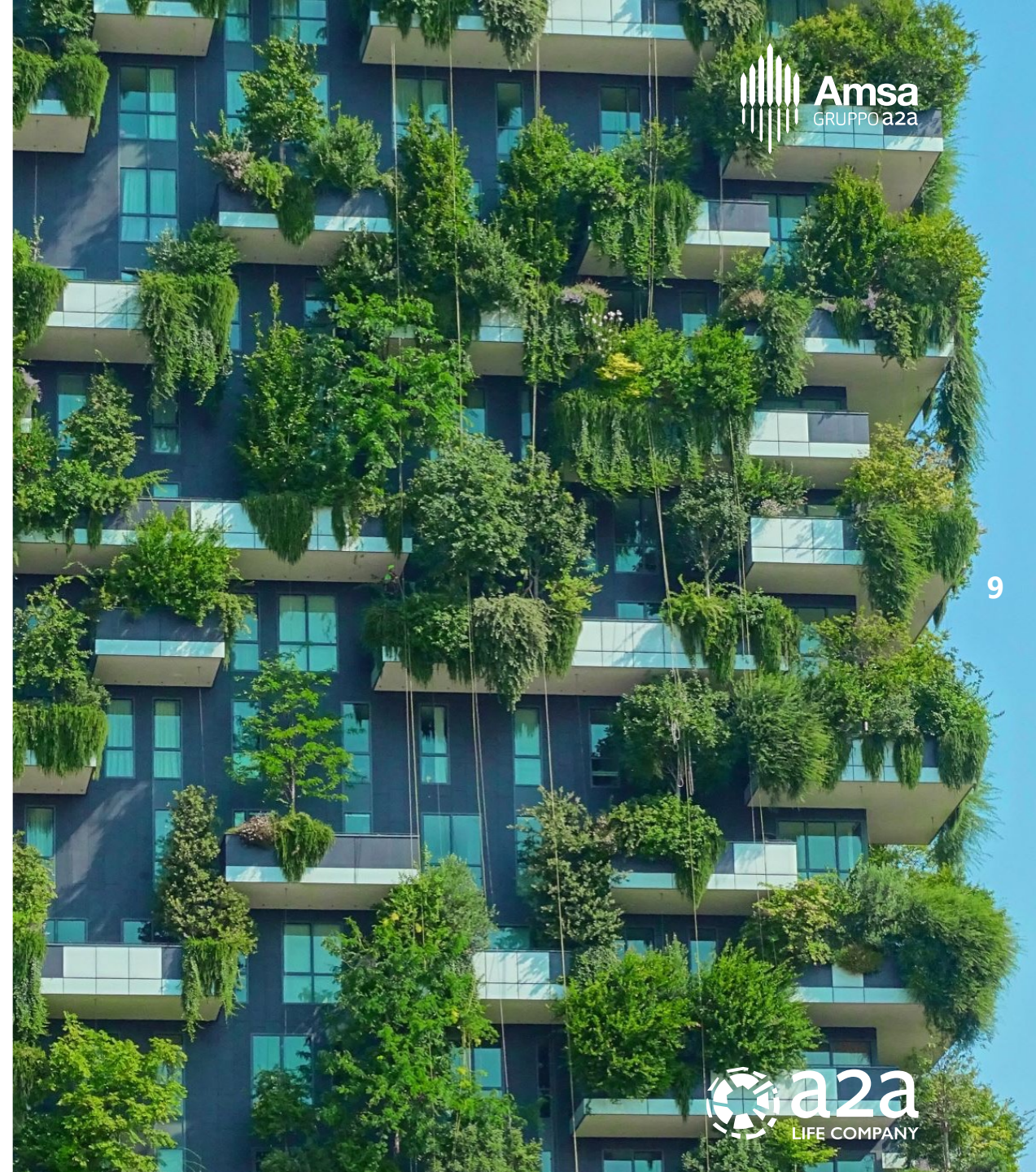


Bulky waste collection

- Free service at home and on booking
- 150,000 bulky waste pick-ups per year (40% from website)
- Bulky furniture, big electronic appliances (fridge, oven, etc.)

HIGH-RISE BUILDINGS IN MILAN

High-rise buildings account for approximately **85%** of housing units in the city of Milan.
The remaining 15% includes single homes.



«DOOR-TO-DOOR» WASTE COLLECTION



- The “door-to-door” waste collection has always been a **tradition** for Milan’s waste management.
- Residential buildings in Italy usually have **courtyards** or **waste rooms** - located at ground floor or in basements – where segregate collection is stocked.
- New apartment buildings must have a waste room large enough for the people living in them.

CITY OF MILAN: WASTE COLLECTION

TOTAL MUNICIPAL WASTE COLLECTION 2021

626,789 t (+3,5%)



ORGANIC

131,985 t (+4,2%)



PAPER AND CARDBOARD

80,177 t (+2,8%)



GLASS

64,942 t (+3,9%)

SEPARATE WASTE COLLECTION 2021

391,188 t (+3,2%)

62,4%



PLASTIC AND METALS

47,903 t (+7,3%)

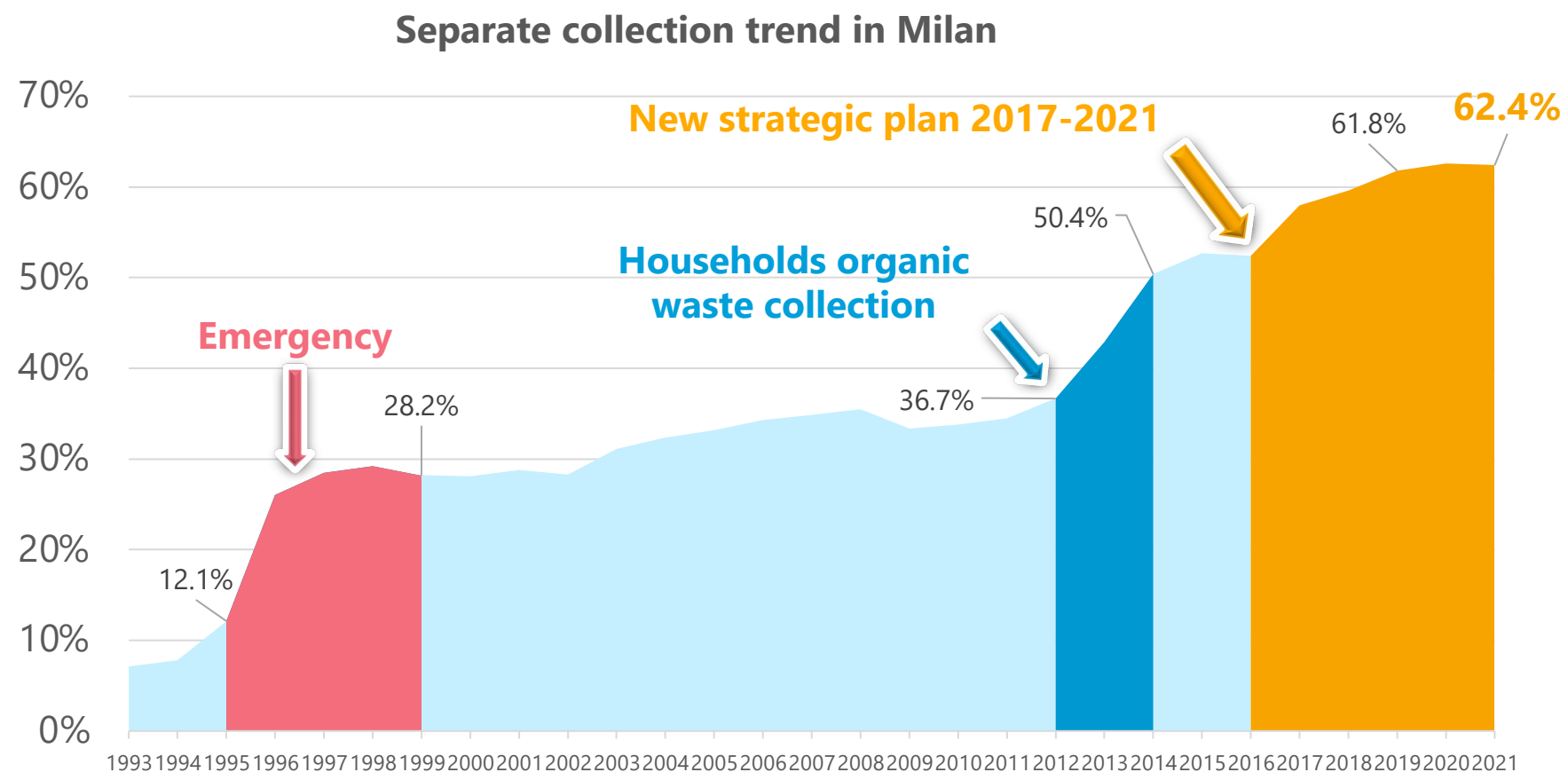


RESIDUAL WASTE

275,266 t (+3,7%)

SEPARATE WASTE COLLECTION

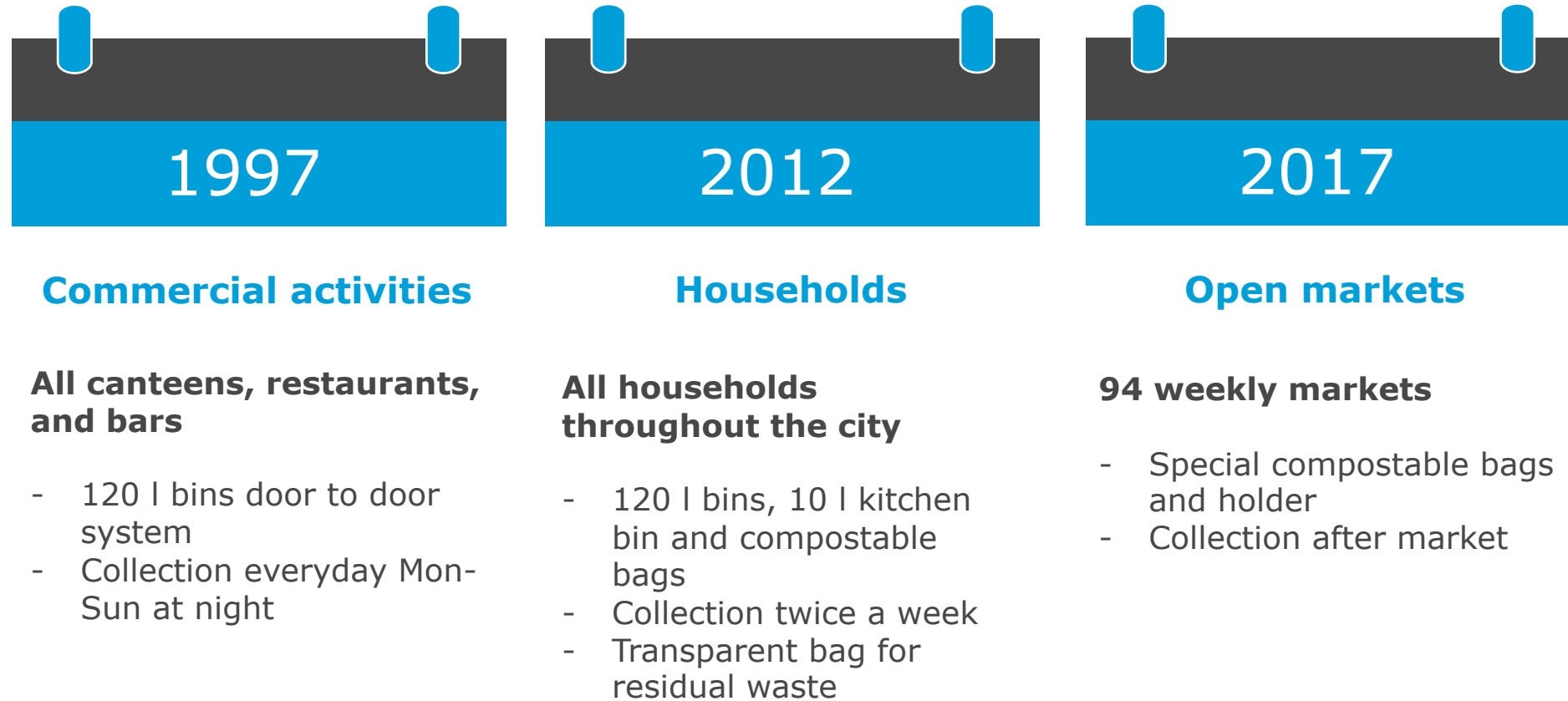
Trend



* Dec 2021

ORGANIC WASTE COLLECTION STRATEGY

Evolution



ORGANIC WASTE COLLECTION STRATEGY

Results



- **Food waste management is a key factor** in the city's **food policy** for sustainability
- Milan food waste management is considered a **best practice** across all major European cities

95* kg

Quantity per capita

95 kg/inh./year is the quantity per capita of food waste that we collect.

This result is the highest across all major European cities.

30 %

Commercial waste

About **30%** comes from commercial activities and schools while the majority is residential

132,000* t

Overall quantity

About **132,000 t/year** of food waste are now being collected separately and sent to AD for organic recycling saving **9,000 t** of CO₂/year**

95%

Average quality

Brown bin shows good quality with **Compostable Material** (CM%) at **95%** on average

* 2020 and 2021 data were heavily affected by COVID-19 pandemic restrictions. In 2019 quantity per capita was 110 kg/inh/year and the overall quantity was 155,000 t.

** Calculated by CIC, the Italian Composting and Biogas Consortium based on the Defra (UK) calculation tool, 2011

FOOD WASTE COLLECTION IN OPEN MARKETS

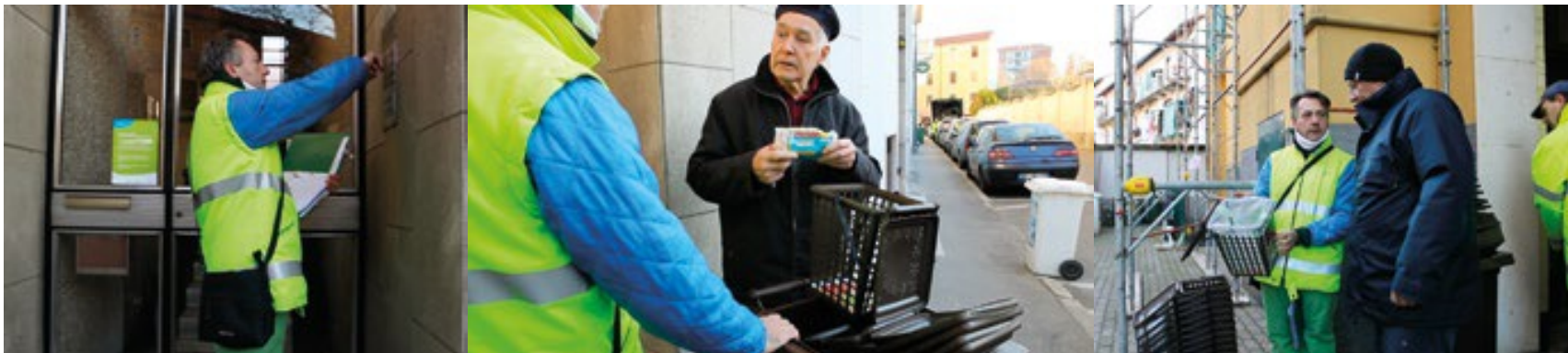
- In 2017 we started a method for collecting the **food waste fraction in market stands** with good results
- In 2018 food waste collection in open markets was extended to all **94 weekly markets throughout the city**
- **1.552 t of organic waste** to be composted were **recovered in 2021** (14% of the total open market waste collected) and **5.061 t** of mixed packaging sent to recycling (**46%**).
- Strong **information campaign** and **continuous monitoring** of the stands are important factors
- LCA evaluation method shows savings for **500,000 kg CO2 eq./y***



* Calculated by Novamont, OTTIMIZZAZIONE della raccolta della frazione organica mercatale: l'esperienza di Amsa a Milano, 2020

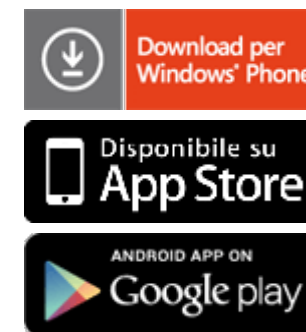
DEDICATED AWARENESS CAMPAIGNS

- **Direct marketing** (letters to all residents, **posters**, **leaflets** and bin stickers)
- **Direct contact with building managers and citizens** (during kit and poster delivery for every building)
- **App PULIamo** for smartphones
- www.amsa.it
- **Public meetings in City Councils**
- **Customer Center** (24/7)
- **School educational project with special materials for students**



COMMUNICATION AND STAKEHOLDERS ENGAGEMENT

- **380,000 CALLS/year** to our **Customer Center** (24/7);
- **Amsa website** constantly updated with the latest news about new services;
- **150,000 bulky waste** pick-up service **bookings** (40% from website);
- **App** for all mobile smartphones;
- **3.300 students engaged in our «School educational project»;**
- **800 people from** environmental organizations, Public Institutions, private companies from all over the world visited our departments and our waste facilities;
- **Informations and communication campaigns** towards all citizens for the improvement of quantity and quality of separate collection;
- **Sustainability report** from 2008 and from 2021 our first Integrated Report. Furthermore, in 2015 we started, first in Italy, to publish **Local Sustainability Reports** referred to specific territories on which we operate.



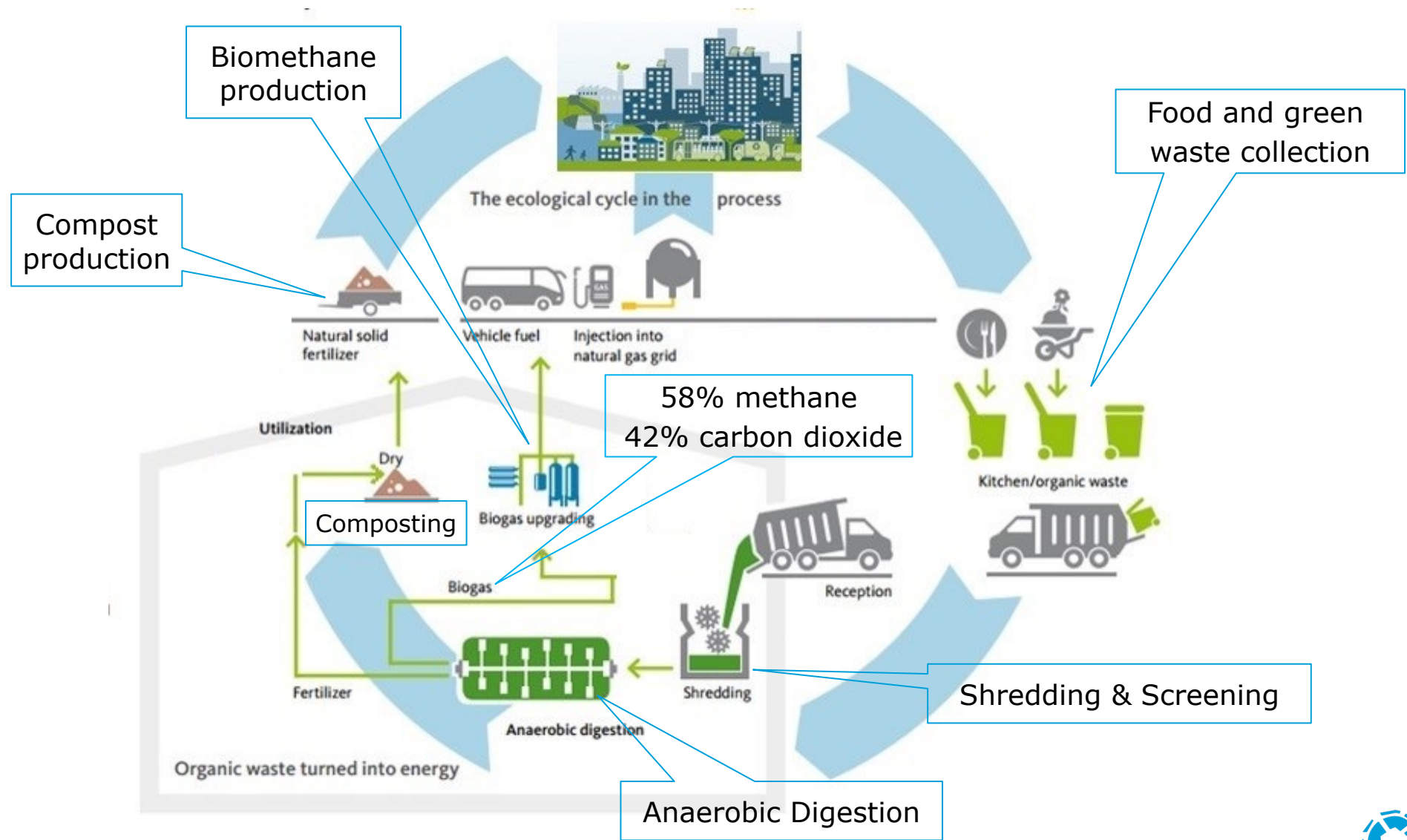
COMPOSTABLES AWARENESS CAMPAIGN



- The market for bio-based and/or biodegradable plastics is expected to grow significantly during the coming years
- COMPOSTABLE BIOPLASTICS and PAPER packaging are suitable for the biowaste bin



ORGANIC WASTE IN CIRCULAR GREEN ECONOMY



ORGANIC WASTE CYCLE PLANT IN LACCHIARELLA

The new basin plant: biomethane as a green fuel for transports

100 kt/y of organic waste will be treated in the FORSU plant, currently under construction.

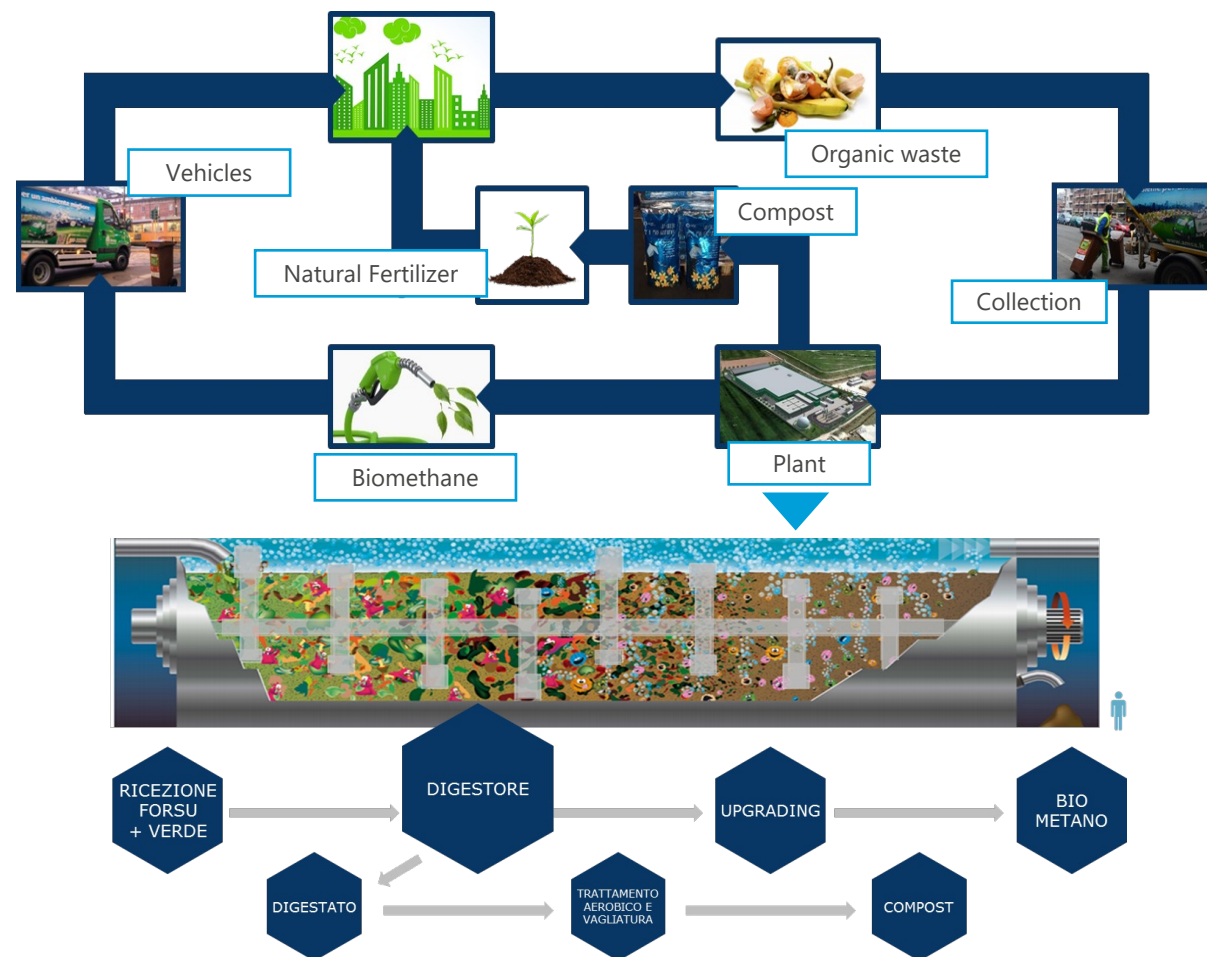
The best technologies include combined processes of anaerobic digestion and composting for the production of:

- **over 8 M m³/y** of advanced biomethane in gaseous form into the network or for transportation
- over **20,000 t/y** of compost, a natural fertilizer certified for use in agriculture



SUSTAINABILITY

- **The advanced biomethane** can be **used in transport**, returning a significant sustainable energy to the city and will be able to fuel the collection vehicles for a virtuous circular economy.
- **The compost** produced through the process allows the soil to be kept at the **levels of organic carbon** typical of **natural grounds**.





THANK YOU FOR YOUR
ATTENTION!